



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/560,841  | 12/15/2005  | Mikio Muro           | 126328              | 8577             |
| 25944   | 7590        | 12/26/2007           | EXAMINER            |                  |
| OLIFF & BERRIDGE, PLC<br>P.O. BOX 320850<br>ALEXANDRIA, VA 22320-4850 |             |                      | THOMPSON, TIMOTHY J |                  |
|   |             | ART UNIT             | PAPER NUMBER        |                  |
|   |             | 2873                 |                     |                  |
|   |             | MAIL DATE            | DELIVERY MODE       |                  |
|   |             | 12/26/2007           | PAPER               |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                                 |                     |
|------------------------------|---------------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b>          | <b>Applicant(s)</b> |
|                              | 10/560,841                      | MURO ET AL.         |
|                              | Examiner<br>Timothy J. Thompson | Art Unit<br>2873    |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 27-39 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 27,29 and 37 is/are rejected.
- 7) Claim(s) 28,30-36,38 and 39 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 December 2005 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 27, 29, 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu(U.S. Pat. No. 2007/0182695).

Regarding claim 27, Shimizu discloses an optical rotatory device having an optical rotatory dispersion characteristic that changes optical rotation angle according to wavelength(fig 15, 132); and a spatial optical phase modulator having an entrance surface capable of controlling the wave surface of an incident light wave or an entrance surface having parts capable of individually controlling the wave surface of an incident light wave to adjust the spatial phase distribution of the incident light wave(Fig 15, 56C); wherein the incident light wave passes the optical rotatory device and the spatial optical phase modulator in that order(fig 15), the optical rotatory device transmits an incident linearly polarized light wave(para 187) containing a plurality of wavelength components and gives optical rotation angles respectively to the wavelength components(para 192, wavelengths of red green and blue light are included in the light provided), the linearly polarized light wave passed through the optical rotatory device is passed through the spatial optical phase modulator with an entrance surface having an spatial optical phase

Art Unit: 2873

modulation degree or with an entrance surface having parts adjusted respectively to spatial optical phase modulation degrees(fig 15 ), the spatial optical phase modulator produces an outgoing light wave having adjusted ratios of light quantities subject to spatial optical phase modulation for the wavelength components, and the wavelength components form different far field patterns, respectively(fig 13, and since an image is formed thus the components form different far field patterns inherently so as to form the image).

Regarding claim 29, Shimizu discloses wherein the spatial optical phase modulator is a parallel oriented nematic liquid crystal spatial light modulator(para 0003).

Regarding claim 37, Shimizu discloses making a linearly polarized light wave containing a plurality of wavelength components fall on an optical rotatory device having an optical rotatory dispersion characteristic to give different polarization angles respectively to the wavelength components(para 187, 192, wavelengths of red green and blue light are included in the light provided) passing the linearly polarized light wave passed through the optical rotatory device(fig 15, 132) through a spatial optical phase modulator(fig 15, 56C) to change the spatial optical phase of the incident light wave on an entrance surface or the spatial optical phases of the incident light wave on parts of an entrance surface; and emitting an outgoing light wave containing wavelength components having controlled spatial light intensity distributions(fig 13, and since an image is formed thus the components form different far field patterns inherently so as to form the image).

***Allowable Subject Matter***

Art Unit: 2873

Claims 28, 30-36, 38, 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The allowable features being the specifics to the light wave, optical rotary device and the modulator.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Thompson whose telephone number is (571) 272-2342. The examiner can normally be reached on 8:30 AM - 6:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mack Ricky can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

